Subject: MSD Colloquium, Thurs, Sept. 7, 11am, 212, A-157
From: Janice Coble <coble@anl.gov>
Date: Tue, 29 Aug 2006 07:49:29 -0500
To: msd@anl.gov

SPEAKER: PROF. FRANCIS J. DISALVO
John A. Newman Professor of Physical Science
Director of the Cornell Center for Materials
` Research and Co-Director of Chemistry and
Chemical Biology
Cornell University

TITLE: "Ordered Intermetallic Catalysts for
Fuel Cell Applications"

DATE: Thursday, September 7, 2006

TIME: 11:00 a.m.

PLACE: Building 212, Room A-157

HOST: Mark Bailey

Refreshments will be available at 10:45 a.m.

Abstract: In principle, fuel cells can convert the chemical energy of a combustion (or redox) reaction to electrical energy at much higher efficiency than can a turbine or an internal combustion engine. For this reason, many believe that fuel cells will be an important component in reducing CO2 emissions and in reducing hydrocarbon fuel consumption.

For the last two decades much of the R&D effort in fuel cell technology rightfully focused on system engineering. Fuel cells are complex systems of stacks of porous electrodes and ionically conducting membranes that optimize the distribution of fuel, removal of final products, efficient collection of current, etc. Now, however, the engineering has progressed to the point that we can see that further progress requires significant materials advances – specifically the "invention" of better and cheaper catalytic electrodes and catalyst supports, better and more durable ionic conductors, materials to interconnect individual cells (bi-polar plates) – all of which must be compatible and integrated together in a robust assembly. Interestingly, the essential components – the electrodes and membranes – must be structured at the nanoscale in order to optimize function.

Some new approaches that provide new, promising avenues for research and engineering of fuel cell catalysts will be presented and discussed. The concepts and ideas discussed will be accessible to non-experts.